Treatment for Infective Exacerbations of Bronchiectasis in Adult In-patients
(Version 2.0)

Guideline Readership
Clinicians, nursing and pharmacy staff will benefit from the guideline as it will provide clear advice on managing bronchiectasis patients with acute infective exacerbations within the trust. In particular it will clarify the difference between recommended antibiotics this groups and others with respiratory infection eg COPD.

Guideline Objectives
This guideline refers to adults with an infective exacerbation of bronchiectasis. The aim is to:
1. Remind clinicians of the features of an infective exacerbation
2. Recommend general management of these patients
3. Recommend suitable antibiotic choices, including dosing and length of treatment course.
4. 2 Appendices attached remind clinicians about dosing alterations in renal impairment and safe monitoring of intravenous tobramycin.

Other Guidance
N/A

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Guideline Author: Dr Joanna Whitehouse

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1. Flow Chart

**Symptoms to suggest and infective exacerbation of bronchiectasis:**
1. Increased cough/wheeze/breathlessness +/- systemic upset
2. Increased sputum viscosity
3. Increased sputum volume
4. Change in sputum colour +/- haemoptysis

**Is the cause of this patient’s bronchiectasis known?**
Asthma
ABPA
Immunodeficiency
Genetic
Previous infections eg TB

**For all patients**
Send sputum for culture (label that patient has bronchiectasis)
Check previous culture results
Consider mucolytics and bronchodilators
Check spirometry
Document physiotherapy/exercise levels

**Prescribe 2 weeks of oral antibiotics:**
1. Co-amoxiclav 500/125 tds if no previous cultures
2. Ciprofloxacin 500 – 750mg bd for *Pseudomonas aeruginosa*
3. Doxycycline or Co-amoxiclav are suitable for *H. influenzae*
4. Avoid Clarithromycin only as it is ineffective against *H. influenzae*

**Mild exacerbation**
Discharge on oral antibiotics
Refer for pulmonary rehabilitation if appropriate
Refer for out patient physiotherapy review if not taught or not practising it!

**Severe exacerbation**
Admit
IV fluids, Clexane, oxygen if required.
Bronchodilators/mucolytics
Spirometry pre/post treatment and **physiotherapy review**
IV antibiotics if has not responded to oral antibiotics or systemically unwell
Consider **OPAT referral** when improving to complete IV antibiotics at home
2. **Executive Summary & Overview**

This guideline has been developed to standardise treatment of patients admitted with infective exacerbations of non-CF bronchiectasis in Heart of England NHS Trust.

3. **Body of Guideline**

Bronchiectasis Admissions Guide (Adapted from BTS Guidelines, ref)

Criteria for diagnosing an infective exacerbation of bronchiectasis requiring antibiotic therapy include:

![Diagram](image)

- Change in sputum production
- Increased breathlessness
- Increased cough
- Increased wheezing
- Fever (>38 °C)
- Malaise, fatigue, lethargy or decreased exercise tolerance
- Reduced pulmonary function
- CXR changes consistent with an infection

A patient with four of the above symptoms is defined as having an acute exacerbation (O’Donnell et al, Chest. 1998;113;1329-1334)

**General Management**

1. Give oxygen if oxygen saturations <92%, via nasal specs and ABG’s performed
2. Assess need for IV fluids for the first 24 hours, then reassess
3. S/C heparin for DVT prophylaxis
4. Refer for daily chest physio
5. Send sputum for culture and AFB’s (if no AFBs in the last year)
   (NB please mark for bronchiectasis as the sputum will then be tested for
   Pseudomonas aeruginosa (PsA) culture)

6. Refer patient to wards 26 or 24 if not already appropriately placed (ward 19 in SOH
   and ward 8 in GHH)

7. Isolation in a side room is required for patients with PsA

8. May need mucolytics eg Carbocysteine 750mg tds
   Refer for Spirometry at start of treatment course.

9. Useful blood tests include CRP,FBC, LFTs, U and Es. You need to check renal
   function particularly before starting tobramycin.

10. Please use long lines (PICC lines) if possible as these preserve veins. These
   patients do not need a change of IV access every 72 hours (see standard operating
   procedure for CF and non-CF bronchiectasis)

**Antibiotics:**

1. Look up previous sputum culture results if available and treat accordingly (icare will
   store results from the GP and all trust sites).

2. If no recent cultures and no previous PsA consider IV co-amoxiclav (Augmentin) 1.2g
   tds. Please note that co-amoxiclav can be given orally (625mg tds) and routine IV
   usage is unnecessary. The requirement for initial IV dosing is a clinical decision
   depending on initial assessment of the patient. A switch to the oral route should be
   considered at an early stage.

   Penicillin allergic patients could use levofloxacin 500mg bd IV as an alternative,
   switching to oral doxycycline orally, instead of Co-amoxiclav.

3. Avoid macrolides as sole antibiotics unless microbiology known only as they are not
   suitable for H. influenza, one of the commonest bugs in bronchiectatic patients.

4. If only oral antibiotics required, consider doxycycline (200mg first dose, then 100mg
   od) or co-amoxiclav (Augmentin 625mg tds). Ciprofloxacin should be reserved for
   those patients with likely PsA requiring oral antibiotics for a mild infective
   exacerbation as there are few other suitable oral alternatives for PsA.

5. You should treat for a minimum of 10 days

6. If patient has Staphylococcus aureus, there are several options, depending on
   sensitivities, eg flucloxacillin 1g qds. For penicillin allergic patients clarithromycin
   500mg bd is a suitable alternative.

7. If a patient has Stenotrophomonas maltophilia, this usually responds well to oral co-
   trimoxazole (Septrin) 960mg bd.

8. If patient is PsA positive, requiring IV antibiotics, first line intravenous treatment
   should be:
   a. Ceftazidime 1-2g tds and tobramycin 5mg/kg od (unless elderly or poor renal
      function). Please see appendix 2 for how to prescribe tobramycin.
b. Ceftazidime 1-2g tds and piperacillin/tazobactam 4.5g tds

c. Ceftazidime 1-2g tds and colistin (Colomycin) 1-2MU tds

(b and c are suitable alternatives)

Please avoid using the above antibiotics (in point 8) for patients who do not have PsA as this results in increased antimicrobial resistance, side effects and unnecessary expense.

9. For patients who are allergic to ceftazidime, piperacillin/tazobactam (4.5g tds), aztreonam (1-2g tds) or meropenem (1g tds) may be substituted.

10. Patients on tobramycin need to have trough levels taken before the second dose and once a week thereafter. Levels should be below 1mg/l.

11. For patients with ESBL positive sputum, please consult with the on call microbiologist.

On BHH site please contact the Respiratory Outreach CNS team for the following:

1. Vascuport access
2. 7% saline and Colomycin nebuliser trials
3. In order to assess suitability for patients to be taught how to administer home IV antibiotics

Consideration for home IV antibiotic administration team. If the patient is systemically improving and able to continue their own care including physiotherapy at home, the OPAT team may be able to finish IV antibiotics at home. This service is available in Birmingham and Solihull. From time to time nurse availability may delay acceptance by a few days. Only use TDS antibiotics if there is recent microbiological evidence of their necessity. Unnecessary use consumes nursing time and delays the discharge of other patients. Contact the ID consultant on for OPAT if in doubt (via switch). IV tobramycin can be administered in Solihull and Birmingham (from 21st November 2015).

Pre-Discharge checklist:

1. Has spirometry been performed prior to discharge?
2. Were the sputum results checked?
3. Can the patient now do their own physio at home, or do they need referral to out patient physios?
4. Does the patient require referral for pulmonary rehabilitation?
5. Has follow up been arranged?
6. Has the patient had their flu vaccination and a Pneumovax?

4. Reason for Development of the Guideline

The reason for development is to standardise the choice and appropriate dosing of antibiotics and general management of patients with bronchiectasis. Currently there is no guidance within the trust for this group of patients. The guideline assists all involved in managing the dosing and safe administration of the common intravenous antibiotics used.

5. Methodology

The guideline was put together with reference to the British Thoracic Guidelines (2010). The draft guideline was refined following consultation with consultant respiratory colleagues across all three sites, respiratory nurse specialists involved in the management of
bronchiectasis patients, our respiratory pharmacist (Baljit Ahitan) and Dr Grace Smith (head of microbiology).

6. Implementation in HEFT & Community

This clinical guideline will be circulated to the appropriate clinical areas. An electronic version will be available on the Trust internet site for access at all times.

7. Monitoring & Suggested Quality Standards

Adherence to the protocol will be monitored by pharmacy, microbiology and respiratory staff.

8. References


Meta Data

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Revision History

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Clinical Director: Signed…

Name…Dr Rifat Rashid

Date…1st July 2016